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| 09/872,607 | 06/01/2001 | Jon Dellon | CM00962S | 2265 |

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| EXAMINER | |
|---|---|
| TRAN, KHANH C | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2631 | |

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/872,607 | Applicant(s) DELLON ET AL. | |
|---|---|---|---|
| | Examiner Khanh Tran | Art Unit 2631 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *01 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9 and 12-15* is/are rejected.

7)☒ Claim(s) *8,10 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Objections*

1. Claim 2 is objected to because of the following informalities: in line 2, "recived" should be changed to -- received --. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-7, 9, 12-13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tait et al. U.S. Patent 6,683,561 B1.

Regarding claim 1, Tait et al. discloses in the figure a coherent radar detection system comprises a radar signal transmitter 4 and a correlation receiver 6, wherein the transmitter includes:

In column 3, lines 39-51, a digital waveform generator 12 produces cosine 11 and sine versions 13 of chirp waveforms. The cosine and sine versions are fed to the in-phase (I) and quadrature (Q) ports of a vector modulator 14. The modulator 14 receives digital signals from the digital waveform generator 12. Hence, the modulator 14 corresponds to the claimed modulator means. Tait et al. does not expressly disclose that the modulator 14 in combination to control the phase of a carrier to produce a transmission signal for transmission by the transceiver during a transmission mode.

However, as known in the art, cosine and sine versions are representative of the in-phase and quadrature signals that carry the phase information. By generating cosine and sine versions, it would have been obvious for one of ordinary skill in the art at the time the invention was made that the digital waveform generator 12 can control the phase of a carrier to produce a transmission signal for transmission;
the receiver 6 includes:

A quadrature mixer configured to down-convert to base band the received signals. The quadrature mixer, coupled to the vector modulator 14, receives a reference signal through a $90^0$ coupler 70. The quadrature mixer corresponds to the claimed demodulator means. In column 2 lines 48-54, the receiver retains the phase information of the received signal by performing the correlation in In-phase (I) and Quadrature (Q) channels. Hence, by performing correlation on the received signal, phase information applied in the transmission mode is demodulated at the receiver.

Regarding claim 2, as recited in claim 1, the cosine and sine versions, fed to the in-phase and quadrature ports of the vector modulator, are in-phase and quadrature signals, which are representative of the phase of the transmission signal. The received signal, being downconverted by the quadrature mixer at the receiver, is also a combination of the in-phase and quadrature-phase signals.

Regarding claim 3, outputs 81 83 are passing through analog-to-digital conversions 84 86 to generate digital values, which are a set of $2^n$ values as known in

the art, of the in-phase and quadrature-phase signals. As result of that, the phase is determined by a combination of digital values.

Regarding claim 4, in column 4 lines 25-35, the receiver 6 receives the received signals, which have been reflected by a target. Tait et al. expresses that the transmit signals are transmitted as radar signal. As known in the art, radar transceiver transmit a radar signal to illuminate a target, and the receiving section picks up the return signals being reflected on targets. In view of that, the received signals are the transmitted signal being reflected on a target, which corresponds to the claimed surface of interest.

Regarding claim 5, in column 4 lines 55-57, Tait et al. expresses that digital signals are stored in computer for further off-line signal processing which may include Doppler processing. As suggested by the teaching, it would have been obvious for one of ordinary skill in the art that the receiver 6 includes a digital signal processor (not shown in the picture), coupled to the demodulator means for off-line signal processing.

Regarding claim 6, as recited in claim 4, the receiver 6 receives the received signals, which have been reflected by a target. The transmit signal is transmitted as a radar signal. Also recited in claim 5, digital signals are stored in computer for further off-line signal processing. In column 4, line 66 through column 5 line 7, the receiver outputs 81, 83 have a frequency corresponding to the Doppler frequency of the target. As further recited in claim 4, radar transceiver transmit a radar signal to illuminate a target,

and the receiving section picks up the return signals being reflected back from a target. In view of that, it would have been obvious for one of ordinary skill in the art that off-line digital processor analyzes to recognize characteristics of digital signals indicating the received signal derived from the transmission signal.

Regarding claim 7, as recited in claim 6, the receiver outputs 81, 83 have a frequency corresponding to the Doppler frequency of the target. Hence, the receiver 6 provides an authentication that the received signal is from a reflecting surface of interest.

Regarding claim 9, Tait et al. does not expressly disclose the receiver 6 operating in heterodyne mode as claimed in the instant application. However, the receiver 6 includes a wide band mixer 60 for mixing down the received signal, therefore, the receiver operates in heterodyne mode. The wide band mixer 60 coupled to receive to receive a received signal through antenna 56 and coupled to receive a signal representative of the transmission signal through a variable delay 62. The wide band mixer 60 provides an output signal to the quadrature mixer, corresponding to the claimed demodulator means as recited above. In view of the foregoing discussion, the wide band mixer 60 corresponds to the claimed mixer means.

Regarding claim 12, claim 12 is rejected on the same ground as for claim 1 because of similar scope.

Regarding claim 13, in column 3 lines 39-50, the vector modulator 14 produces a waveform output, which is a chirp pulse with 1 GHz bandwidth centered at 4 KHz, and the frequency within the pulse varies from 3.5 GHz to 4.5 GHz. In view of the forégoing disclosure, the vector modulator 14 acts as a pulse generator as claimed in the instant application.

Regarding claim 15, said claim is rejected on the same ground as for claim 1. Furthermore, Tait et al. system is a coherent radar detection system, which transmits a radar signal to irradiate the surface of a target, and receives return signals being reflected by the surface of target, which the receiver analyzes.

3. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tait et al. U.S. Patent 6,683,561 B1 as applied to claim 12 above, and further in view of Axline,Jr. et al. U.S. Patent 5,486,830.

Regarding claim 14, Tait et al. uses separate antennas for transmitter 4 and receiver 6. As well known in the art and for practical reasons, the transceiver uses same antenna for both transmitting and receiving side. Nevertheless, Axline,Jr. et al. discloses a radar transponder as shown in figure 1 utilizes same antenna 6 for both a transmitter 4 and a receiver 12. A T/R switch 8 coupled to the antenna 6 is implemented to switch to transmitter 4 in transmission mode and to receiver 6 in reception mode. Because the practical reason as stated above, it would have been obvious for one of ordinary skill in the art at the time the invention was made that Tait et al. coherent radar detection

system can be modified to implement a transmission/reception switch and use the same antenna for both transmission and reception.

***Allowable Subject Matter***

4. Claims 8 and 10-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Seifert et al. U.S. Patent 5,872,520 discloses "Identification And/Or Sensor Sensor".

Greeff et al. U.S. Patent 6,169,474 discloses "Method of Communicationsin a Backscatter System, Interrogator, And Backscatter Communications System".

Proctor, Jr. et al. U.S. Patent 5,687,196 discloses "Range And Bearing Tracking System With Multipath Rejection".

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

Khanh Tran 11/12/2004

KHANH TRAN